METHOD AND APPARATUS FOR DYNAMIC CLASS-BASED PACKET SCHEDULING

ABSTRACT

A method and apparatus are provided for scheduling data for transmission over a communication link shared by multiple applications operating on a host computer. The apparatus incorporates multiple storage components, with each storage component configured to store descriptors of data having one of multiple priorities. Each descriptor identifies a location (e.g., in host computer memory) of a portion of data to be included in a packet transmitted over the communication link. The apparatus services each storage component in turn to retrieve one or more descriptors, identify their associated data, retrieve the data and prepare it for transmission. Each storage component has an associated weight, which may be proportional to the priority of data represented by descriptors stored in the component. A storage component's weight may indicate a portion of the transmission bandwidth or a maximum amount of data that may be scheduled for transmission each time the component is serviced. The weights are dynamic and may be updated during operation of the apparatus in order to alter the amount of data that may be transmitted during one of a storage component's turn at being serviced. If a weight is changed, servicing of the storage components restarts with the storage component associated with the highest priority data. If more data is scheduled for transmission during a servicing turn than indicated by the weight of the serviced component, a deficit is formed for that component. The deficit serves to decrease the maximum amount of data that may be scheduled during a succeeding turn for the component. When a weight is changed, a deficit may be reset to zero.